

An Inaugural Dissertation,
On the
Pathology of Jaundice,
For

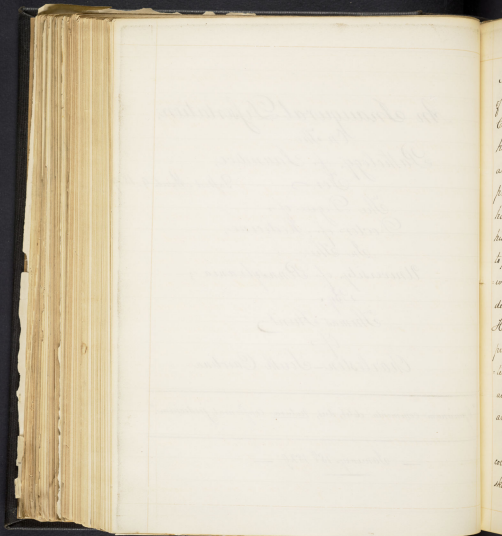
Read March 9. 1829

The Degree of
Doctor of Medicine,
In the
University of Pennsylvania;
By

Thomas Hunt
of
Charleston—South Carolina.

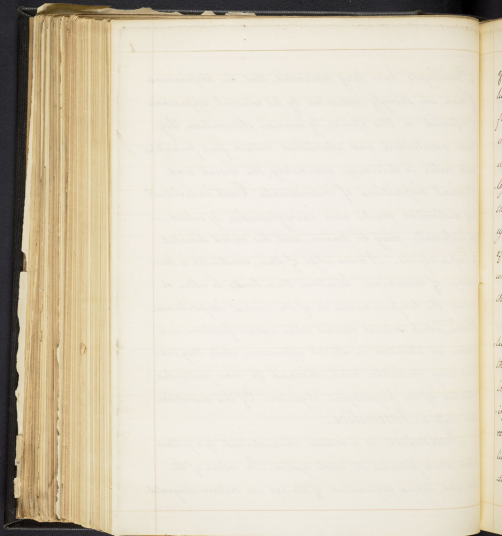
"Opinionum, argumenta dabo, Natura confirmat, judicium."

— January, 18th 1829 —



Physiologists have long contended, that the temperaments of man are strongly indicated by his external appearance. Confirmed in this opinion, by common observation, they have ascertained and established certain fixed principles and rules, to determine, accurately, the moral and physical dispositions of individuals. Each individual has distinctive marks and idiosyncrasies, by which, his propensities may be known, and his mind directed to proper objects. A knowledge of these, constitutes a knowledge of mankind. Whatever, then, tends to alter or destroy the temperaments, is of the highest importance. Hence, ^{diseases} which subvert organic action, impair functions, and produce an alteration in external appearance, while they interest every philosophic mind, demand the more particular attention of the physiological physician. Of this description and class is Jaundice.

Jaundice is a disease characterised by a yellow colour which pervades the whole system. The colour of the skin and tunica conjunctiva of the eye are certainly discoloured.



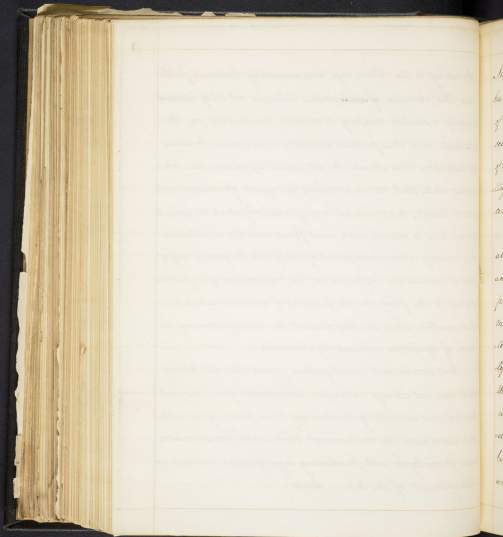
of this complaint. Arising from mans organization and his liability to structural derangement, we accordingly find, that from the earliest times it has afflicted the human race; and its symptoms have been described by old ^{writers} with their accustomed accuracy. So us, their pathological and physiological views, have been transmitted unimpaired. From the dark ages, when the light of science, obscured by monkish ignorance and superstition, faintly glimmered in the view of her most zealous votaries, down to the present period, when medicine advances with rapid and gigantic strides, the same theories of Jaundice have been uniformly adopted.

Hippocrates, Vol. II De morbis, says, that the bile, inspissated during summer, is condensed dark and constant in those persons, whose livers and gall-bladders are deranged in secretion by intemperance in eating and drinking. speaking of the effect of heat on the system. — To be Oxydus & not viscidus ut in Estivo; and then adds. Sicut in Oxydus ut Estivo & in Quercu, and a little lower down. & in utraque xeris no Quercus & xeris ut in Quercu xeris. Lib. de Naturae Hominis, Sed. 14.

The first thing I saw when I stepped out
 of the train was a vast, open landscape. The
 air was fresh and cool, a welcome change from
 the stuffy atmosphere of the city. I walked
 along the riverbank, watching the boats
 glide smoothly across the water. The sun
 was low in the sky, casting a golden glow
 over the scene. I felt a sense of peace and
 tranquility that I had never experienced before.
 The people I met were friendly and
 welcoming, making me feel like I had found
 a new home. I was in luck, for this was
 indeed a beautiful place, one that I would
 never want to leave. The river was the heart
 of the town, and it was a pleasure to see
 it so well maintained. The buildings were
 charming and well-kept, and the streets
 were clean and safe. I was in good luck,
 for this was a truly wonderful place to live.
 The people were kind and helpful, and the
 scenery was breathtaking. I was in luck,
 for this was a truly wonderful place to live.
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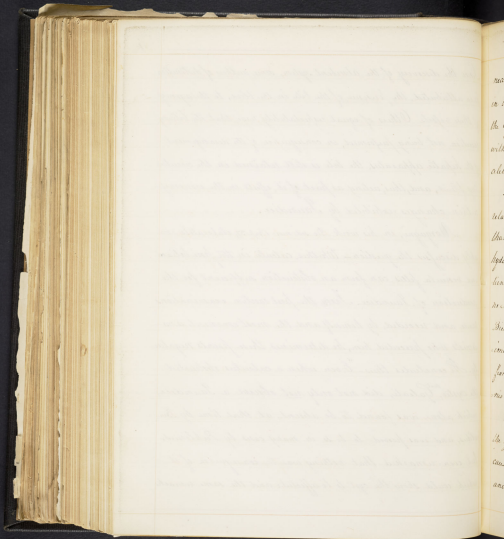
According to the Coan sage and succeeding humoral pathologists, this increase of acrimonious colluvies, not being induced to supply a secretion necessary to digestion, accumulates in the biliary ducts, and thus produces distention and disease. To relieve this distention and obviate the attendant symptoms, the physicians state, that nature reviving her usual operations induces a process, denominated "regurgitation", by which the unwholesome secretion is thrown back, and forced into the circulation. Thus mixing and incorporating itself with the general mass of blood, it exercises an influence in the performance of the functions assigned to this fluid, viz. the functions of nutrition, respiration, and secretion. Thus did they unravel the mystery attending the train of symptoms induced by Jaundice.

But, anatomical investigations proved that the biliary ducts were not always enlarged. Thus, driven from this first position, but unwilling to abandon their summary views, they then advanced the doctrines of "obstruction", "constriction", and "paralysis", all producing "regurgitation" without an enlargement of the biliary ducts.



Since the discovery of the absorbent system, some authors of distinction have attributed, the presence of the bile in the blood, to the agency of these vessels. Others of equal respectability urge, that the biliary secretion not being performed, in consequence of the disarrangement of the hepatic apparatus, the bile is still retained in the circulating fluids, and, thus, acting as part of it, effects in the economy certain changes exhibited by Jaundice.

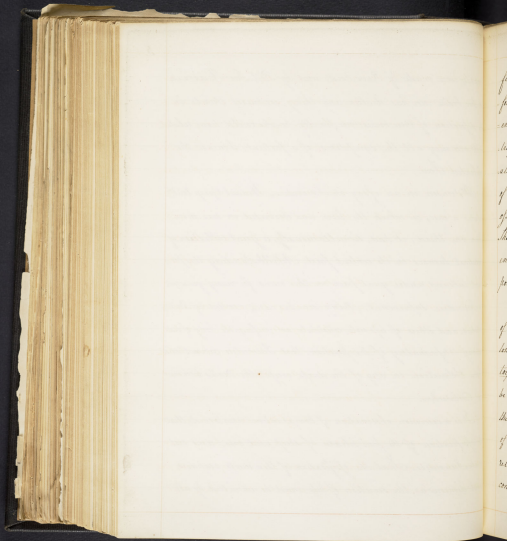
Morgagni, in his work *De morbis* Chap. 33, elaborately and ably discusses the question—Whether, calculi in the *fori biliaris* and *venulae felles* can form an obstruction sufficient for the production of Jaundice. From the post mortem examinations made and recorded, by himself, and the most eminent anatomists who preceded him, he determines these points negatively. He concludes thus—“Even when a calculus obstructed the cystic, ^{and} *Galeati*, did not only not observe a Jaundice, which alone was found to be absent, at that time by Biondini, and was proved to be so, in many cases by Pichardus, but even remarked that nothing was the consequence of it which could show the cyst to be affected: and the same remarks



nearly were made by Ravestord: and by Phil. Jac. Harman in two bodies: nor has Haller any thing contrary thereto in the dissection of these bodies: nor finally he who could have related with accuracy all the symptoms of a patient, I mean the celebrated Jew.

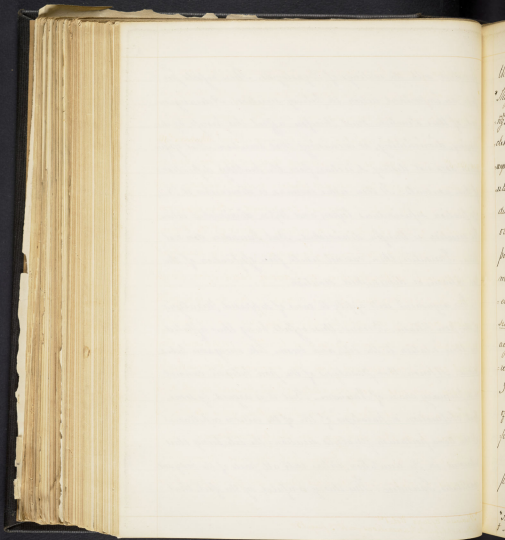
Dr. Jensen in an essay on Jaundice, *Medical Essay* Vol. II. relates a case, in which the liver was increased in size more than one third; it had, simultaneously, a great collection of hydatidial tumours in its central part. Notwithstanding this patient laboured under great pain in this viscus for many years, no Jaundice intervened. Many similar cases recorded by Boerhaave, Bichat, and others of late date, constitute an irrefragable body of testimony confirmatory of the position, that Jaundice cannot arise from obstruction in any of the ducts, except, the Ductus Communis Choledochus.

It is a common observation of comparative anatomists, that the ossification of the periosteum of sheep and oxen does not cause Jaundice. That the ossification of these ducts impairs and diminishes the secretion of bile must be admitted by all



familiar with the writings of Physiologists. These vessels perform an important action in biliary secretion. A derangement of their structure must therefore affect this process, by destroying, diminishing, or increasing that secretion. That ossification does not destroy it, is clear, from the healthy digestions of these animals. It then either increases, or diminishes it. But, ossification superinduces *torpor*, and *torpor* diminishes action. The secretion is therefore diminished. But Jaundice does not ensue. Jaundice, then, cannot result from ossification of the *peri biliaris*, or diminished secretion.

This argument will apply to cases of supposed paralysis of the *peri biliaris*. Because, these vessels, being thus affected, lose their relation to the bile, and become like inorganic tubes, *torpid*. A priori, then, paralysis of the *peri biliaris* cannot be a primary cause of Jaundice. But it is argued, by some, that "obstruction or paralysis of the ~~of the~~ ^{of the} external capillaries of the Vena portarum prevents secretion: the bile, being thus retained in the circulation, enters into all parts of the body and constitutes Jaundice. This theory is refuted by the fact, that



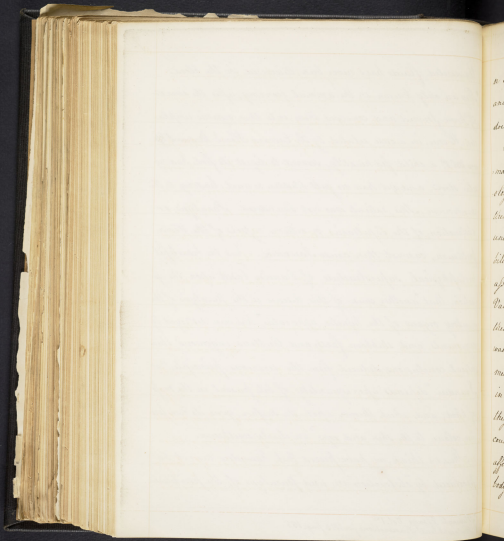
The secreted fluids have never been discovered in the blood.

* They are only known in the animal economy, after the secretory ^{organs} have formed and conveyed them into their organic receptacles. Hence, in a case related by Dr. Eschard Horn's Medical Essays Vol. 8, a child fed heartily, seemed to digest its food, had regular stools, and yet had no gall bladder or duct leading to the duodenum. This patient was not jaundiced. Paralysis, or obstruction, of the capillaries or return vessels of the Vena portarum, cannot then cause Jaundice. Thus the beautiful metaphysical superstructure of Darwin based upon the assertion, that "another cause of this disease is the paralysis of the secretory organs of the hepatic apparatus," has been destroyed by arguments and stubborn facts, and Cullen's ingenious but unjust conclusions, deduced from the erroneous principle, that Jaundice "depends upon quantity of bile present in the mass of blood; and which thrown upon the surface, gives its own peculiar colour to the skin and eyes," are clearly overthrown.

Thus, we think, we have proved that Jaundice cannot be produced by "obstruction" in, and paralysis of, the portal system.

* Medical Essays, Vol. 1st

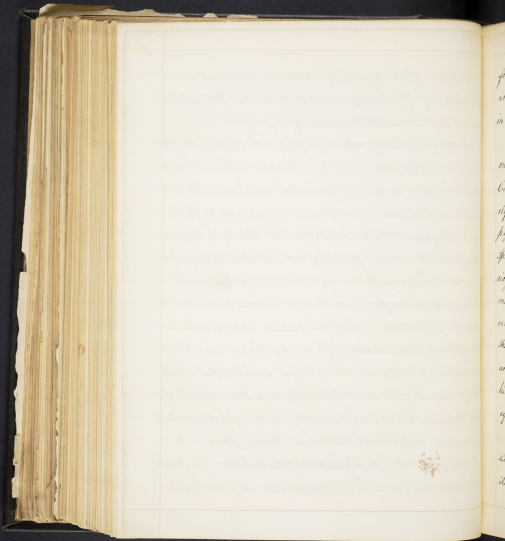
† Philosophical Transactions for 1813, page 185



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or capillaries of the hepatic apparatus. From the same facts, and reasoning by analogy, we may conclude, that this affection does not originate in the "constriction" of these vessels.

Thirdly, that biliary calculi confined to the *Vesicula fellea* primarily cause Jaundice, merits some attention. All correct pathology is founded on accurate post mortem examinations. We will therefore consider these examinations in relation to the point under discussion. Haller, in his *Opuscula Pathologica*, says, that biliary calculi are more frequently met with than usually. This assertion has been confirmed by all succeeding anatomists. Valart examined four and Morgagni numerous bodies. In all these the gall bladder contained calculi. Not one of them was afflicted with Jaundice. In our dissecting rooms we daily meet similar instances. This is ample evidence, that calculi in the *vesicula fellea* do not primarily cause Jaundice. For if they produced the disease primarily, no case of biliary calculi could occur without an attendant *Icterus*. Because, this affection would then be originated by the irritation of a foreign body. While then a calculus, which is an unnatural production and

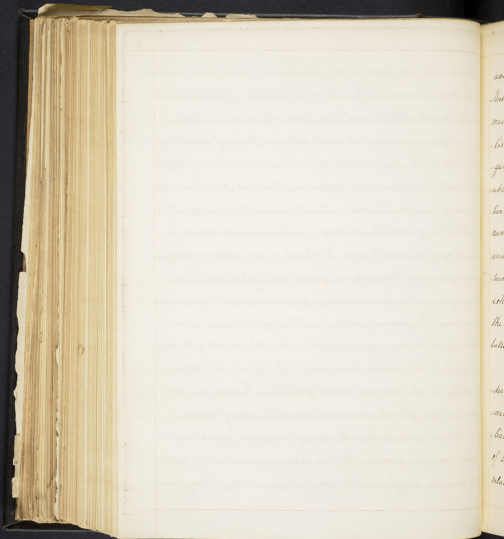


foreign body, is confined in the Gall-bladder it must prove irritative, and cause Jaundice. But the effect is widely different. Calculi in the Vesicula Fellea cannot, then, primarily cause Jaundice.

Before we consider the much admired theory of absorption, one word on the regurgitation of the bile into the blood vessels. Dr Caldwell in a note on this subject, in *Cullen's First Lines*, obviously designates the flagrant absurdity, and the physiological impossibility, of such an occurrence in the animal economy.

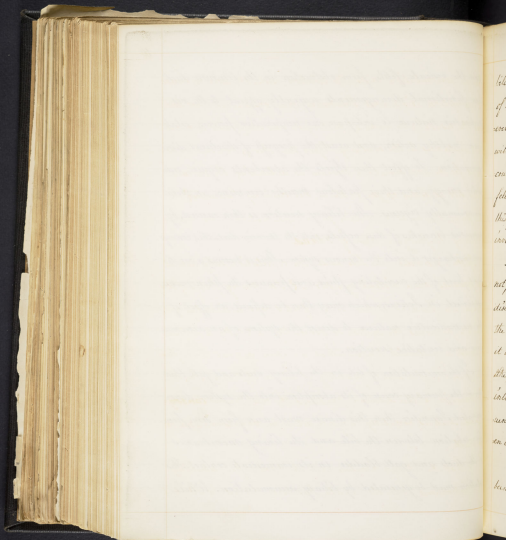
Speaking of Cullen, he says, "It betrays in our author a most glaring deficiency of physiological knowledge, to assert, that the bile may regurgitate in its ducts, and pass from them into the ascending vena cava." On grounds just as lenable, might he have asserted, that the blood may regurgitate from the right ventricle of the heart and pass by an inverted movement, to the left, as to have declared his belief, in this retrograde march of the bile. "In either case an equal degree of violence must be done to the order of nature."

We will, now, consider the theory of absorption, which can be stated in a few words. The liver takes on an unhealthy action, its secretion is affected - bile accumulates, in the biliary ducts



and the venous filis, from obstruction in the common duct. These functional derangements urgently appeal to the vis medicatrix nature to inhospice her recuperative powers, establish healthy action, and arrest the progress of structural degeneration. To effect these objects the absorbents require invigorated energy, and their palatous mouths commence an exertion unusually vigorous. The biliary secretion is then carried, by numerous branches of these vessels, into the thoracic duct - this conveys and discharges it into the venous system. Thus, it becomes a constituent part of the circulating fluid, and produces the phenomena exhibited in *Jaundis*, which may then be defined, an effect of the vis medicatrix nature to divert the system of an accumulated and irritative secretion.

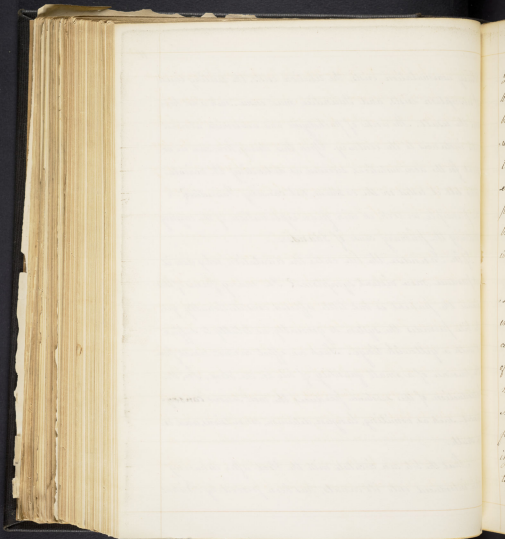
If the accumulation of bile in the biliary ducts and gall bladder be the primary cause of its absorption into the system deranged *Jaundis*, then, this disease must arise from some peculiar relation between the bile and the living membranes of the ducts and gall bladder in its immediate contact. This relation must be generated by biliary accumulation. While



iliary accumulation exists, the relation exists, the exciting cause of absorption exists, and Jaundice must ensue. Such is not however the result. The works of pathologists and anatomists abound with instances to the contrary. Upon this theory, how can we account for the accumulations, recorded as distending the vena porta till it burst on the os ilium, not causing Jaundice? To this principle we look in vain for an explanation of the mystery involving the primary cause of Jaundice.

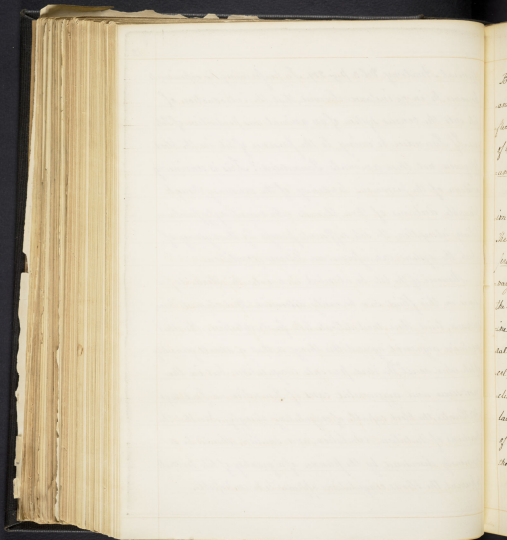
If the Jaundice, the bile enter the circulation, why does it not produce more violent symptoms? In many forms of this disease the patient is but little affected constitutionally yet, the bile pervades the system so generally, as, totally to suffuse it with a yellowish tinge. Such an effect cannot result from the presence of a small quantity of bile in the blood. For, the introduction of this substance produces the most serious consequences—such as, vomiting, lassitude, delirium, convulsions, and even death.

That the bile can circulate with the blood after it having been introduced into its canals, has been proved by Richat



General Anatomy Vol. 3, page 269. In performing his experiments, however, he in no instance observed, that the introduction of bile into the venous system of an animal was productive of Jaundice. If Jaundice be owing to the presence of bile in the blood. Why were not these animals Jaundiced? This is convincing evidence of the pernicious tendency of the visionary though plausible declaims of those theorists, who vauntingly proclaim biliary absorption the sole sufficient source by the agency of which, the system can assume an Icteric condition.

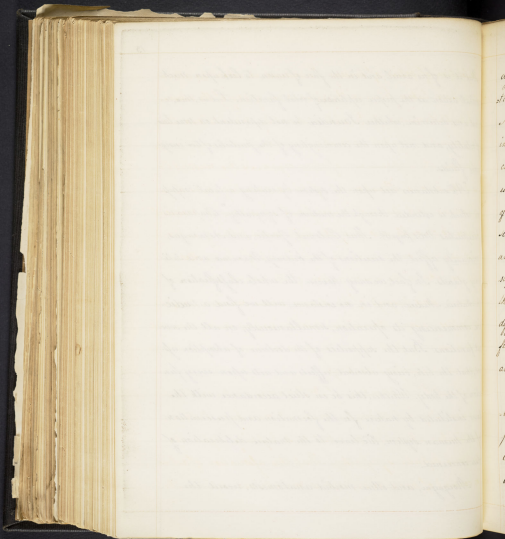
Moreover, if the bile be absorbed and enter the blood, its presence in this fluid can be easily discovered. But chemists have, in vain, tried their most delicate tests for its detection. Another conclusive argument against this theory is, that a small quantity of bile when mixed ^{with} the blood prevents coagulation; but in the most severe and aggravated cases of Jaundice, we find, says Mr Hunter, the blood capable of coagulating strongly. Now that the functions of Nutrition, Circulation, and Secretion, should be so injuriously disordered by the presence of a quantity of bile too small to prevent the bloods coagulation appears to be impossible.



But it is of no avail and in the face of reason to look upon mechanical action as the proper explanation of vital function. Let us, therefore, first and determine, whether Jaundice be not dependant on some law of vitality, and not upon the commingling of the particles of two inorganic fluids.

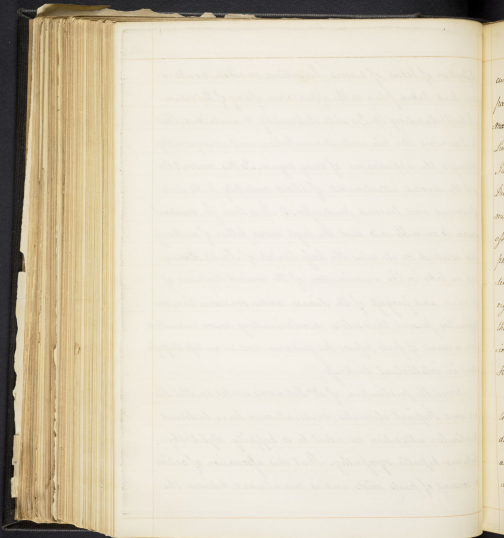
"All substances act upon the system by creating a local impression which is extended through the medium of sympathy." *Chapman's Therapeutics* Vol. I page 69. Thus Calomel, Garlic, and Asparagus, primarily affect the secretions of the kidneys, Mammary and Salivary glands. In fact, we may traverse the whole classification of the Materia Medica, and in no instance, will we find a medicine commencing its operation, simultaneously, on all the vital functions. But the supporters of the doctrine of absorption assert, that the bit, being absorbed, affects and acts upon every function of the body. Whether, this be in strict accordance with the laws instituted by nature for the formation and preservation of the human system, We leave to the mature deliberation of those concerned.

Morgagni, and other medical anatomists, record the



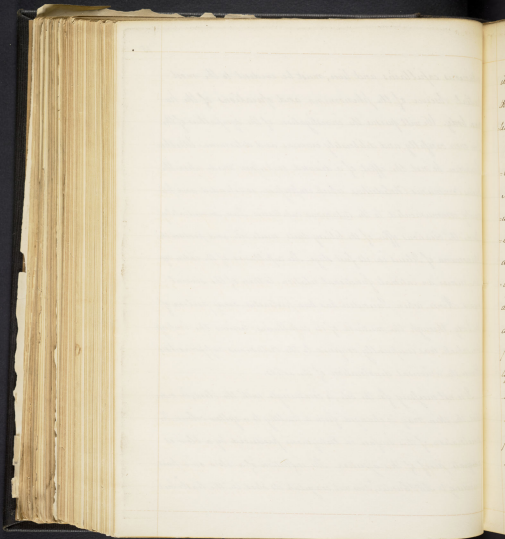
dissection of bodies of persons Jaundiced, in whom no alteration had taken place in the appearance of any of the viscera. Notwithstanding this, it is still obstinately maintained, that in Jaundice the bile enters the circulation, and consequently, changes the appearance of every organ. Is this reason? Or is it the devoted attachment of blind credulity to the dicta of admired and learned predecessors? It is time for medical science to crumble into dust the high raised pillars of authority and demolish on its ruins the holy temple of Truth. Every step we take in the examination of the various declivities of the origin and progress of the disease under consideration, new difficulties present themselves - discriminating scarce, exhausted from a want of facts, refuses for guidance, and we are left to grope about in intellectual darkness.

Since the publication of Dr Johnson's works, on the Liver and Tropical climates, medical men have bestowed particular attention on what he so happily styled the cutaneo-hepatic sympathy. That this association of action or consent of parts exists, and is maintained between the



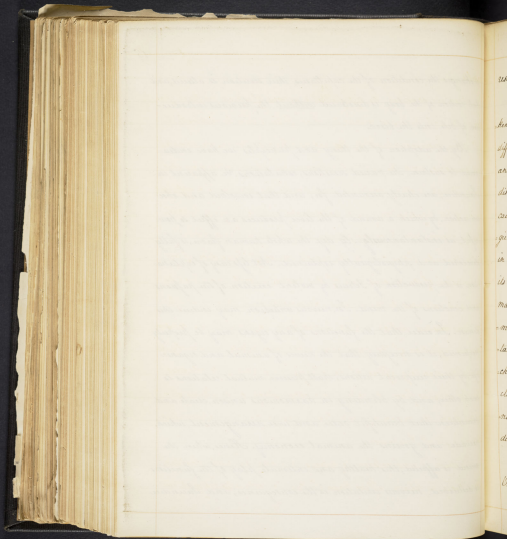
cutaneous capillaries and liver, must be evident to the most partial observer of the phenomena and operations of the human body. We will pursue the investigation of the sympathies of the Liver more carefully, and deliberately examine and determine. Whether Jaundice be not the effect of a diseased impression made upon the Ductus Communis Choledochus, which impression, is extended and primarily communicated to the cutaneous capillaries. Then, immediately, opens the vicarious office of the biliary ducts, secrete bile, and produce the phenomena of Icterus in its first stage. The capillaries of the entire system possess an intimate functional relation to those of the several organs. Hence, when Jaundice has been protracted, every portion of the body, through the minute of its capillaries, receives the impression which was originally confined to the cutaneous apparatus. Hence, the universal discoloration of the solids.

It is not necessary for the bile to commingle with the blood, in order that the skin may be changed from a healthy to a yellow colour. The discoloration of this surface in Erysipelas produced by a blow is adequate proof of this assertion. The infliction of a blow on a part, according to Mr Hunter, "does not coagulate its blood in the least: but



it changes the condition of the capillaries, their secretion is altered, and that portion of the body is discharged without the precious introduction of bile into the blood.

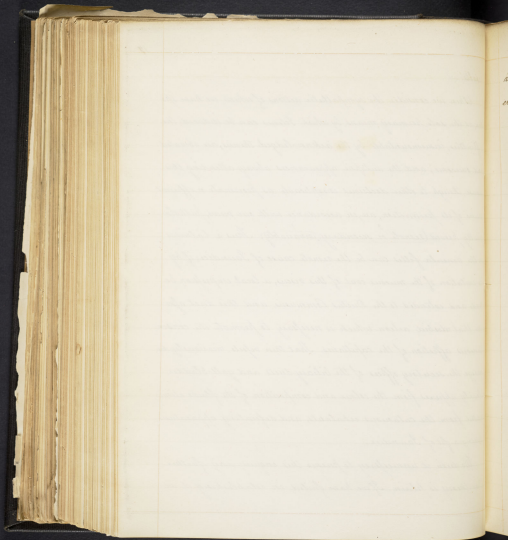
By the adoption of the theory and principles we have endeavored to sustain, the varied secretions, exhalations, &c. apparent in Jaundice, are clearly accounted for, and that inviolent and obscure action, by which a wound of the liver produces an effect so powerful, as instantaneously to dye the whole human frame, is fully developed and physiologically explained. Not less easy of explanation is the production of Idioms by violent exertion of the passions and emotions of the mind. For, nervous irritation may induce this disease. In order that the functions of any organs may be perfectly performed, it is necessary that the nerves of animal and organic life, by their reciprocal actions, shall pursue mutual relations to each other, and by blending in harmonious union, create and maintain that beautiful order and wise arrangement, which pervades and governs the animal economy. Hence, when the mind is affected, this healthy and intimate play of the functions is disturbed, nervous irritation is the consequence, and Jaundice



results.

When we consider the sympathetic actions of which we have spoken, as the sole primary means, by which Jaundice can be induced, the difficulties, insurmountable by the acknowledged thesis, are obviated and overcome, and the autopsic appearances always attending this disease, though to others decisions inexplicable as proximate or efficient causes of its production, are, in accordance with our views, pathologically proved (remote or secondary, invariably). Thus a Catarrh in the Venula fellea can be the remote cause of Jaundice, if by its irritation of the mucous coat of this viscus, a local impression be made and extended to the Ductus Communis, and this duct assume that relaxed action which is necessary to promote the copious effusion of the capillaries. That then results, obviously, discharge the secretory offices of the biliary ducts and gall bladder, clearly appears from the colour and composition of the fluids eliminated from the cutaneous exhalants, and defecating apparatus during a fit of Jaundice.

We deem it unnecessary to pursue this enquiry any farther. One thing is plain. If we have failed in establishing it we



sumably find, that we have, convincingly, pointed out the physiological
errors in the preceding declaims.

